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Document Version
Final published version

Published in:
Journal of Management Studies

DOI:
[10.1111/joms.12846](https://doi.org/10.1111/joms.12846)

Publication date:
2023

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Citation for published version (APA):
Vedel, J. B., & Geraldi, J. (2023). How Managers Respond to Paradoxical Control-Trust Dynamics in Interorganizational Relationships over Time: A Constitutive Approach. *Journal of Management Studies*, 60(8), 2060-2090. <https://doi.org/10.1111/joms.12846>

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How Managers Respond to Paradoxical Control-Trust Dynamics in Interorganizational Relationships over Time: A Constitutive Approach

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ABSTRACT Control-trust dynamics are fundamental to organizational life, but managers struggle to balance them because these dynamics draw on opposing mechanisms. Past research has mainly assumed that substitution and complementarity constitute key control-trust dynamics, which has limited scholars' understanding of why these dynamics are difficult to balance and how managers deal with them over time. We explore managers' responses to paradoxical control-trust dynamics. We conducted a longitudinal case study of how managers in a pharmaceutical company dealt with these dynamics in an interorganizational relationship with a university and a biotech firm. Our findings show (a) a new category of response to control-trust dynamics beyond substitution and complementarity (the More-Than), (b) three new enacted responses beyond balancing (paradoxical thinking, fulfilling promises, and transcending), and (c) a governance path that managers' responses evolve over time. Our findings suggest that managers' responses to paradoxical control-trust dynamics ensure the performance and endurance of interorganizational relationships.

Keywords: constitutive approach, control-trust dynamics, governance path, paradoxes, managerial actions, pharmaceutical industry

INTRODUCTION

Control and trust are fundamental to organizational life (Long and Sitkin, 2018), specifically collaboration among actors both within and among organizations (Bijlsma-Frankema and Costa, 2005). When effectively balanced, control and trust positively affect the performance and motivation of individuals (Das and Teng, 2001; Weibel et al., 2016) and the endurance of relationships (Brattström et al., 2019; Vlaar et al., 2007; Zheng et al., 2008). However, balancing control and trust is difficult because they draw on

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opposing mechanisms (Long and Sitkin, 2018; Lumineau, 2017; Weibel, 2007). Actors use controls ‘to specify, measure, monitor, and evaluate others’ work in ways that direct them toward the achievement of desired objectives’ (Long and Sitkin, 2018, p. 725); in contrast, trust is ‘a psychological state where individuals are confident that another entity will reliably act in his or her best interest’ (ibid.). Consequently, balancing control and trust to reach positive outcomes is a fundamental managerial challenge.

Management scholars have explored this balancing mainly through the concepts of substitution and complementarity. Sometimes control and trust work as complements that reinforce each other; other times, they work as substitutes that replace each other (Long and Sitkin, 2018). While some scholars have emphasized one or the other of these concepts (Möllering, 2005; Möllering and Sydow, 2019; Poppo and Zenger, 2002), others have explored their dynamic interplay (Cardinal et al., 2017; Costa and Bijlsma-Frankema, 2007; Das and Teng, 2001; Huber et al., 2013; Weibel, 2007). While the conceptualization of control-trust dynamics as substitution and complementarity, and their interplay, has advanced the literature in important ways, it has not yet developed a more comprehensive theory on these dynamics and explained managers’ role in creating and responding to the dynamics’ contradictions (Long and Sitkin, 2006; Long and Sitkin, 2018).

In this article, we ask: How do managers respond to paradoxical control-trust dynamics in interorganizational relationships over time? To move beyond substitution-versus-complementarity, we adopt a constitutive approach that assumes social interaction (such as in managerial practices) brings phenomena (such as control-trust dynamics) into existence and sets the conditions for how phenomena develop over time (Putnam et al., 2016, pp. 77–78). A constitutive approach entails studying the origins, formation, and development of things by exploring how language and social interaction determine how actors enact things in organizational practices. Consequently, a constitutive approach draws attention to managers’ significant agency, not merely in reacting to external dynamics but in creating, shaping, and responding to such dynamics.

Following Putnam et al. (2016), we adopt a constitutive approach to study *paradoxical* control-trust dynamics. Because the literature has conceptualized control and trust through substitution and complementarity, it has not fully explained the opposing mechanisms of control and trust as sometimes paradoxical and requiring managers’ creative responses. Paradoxes are oppositional pairs that are interdependent and exist simultaneously but contradict one another (Putnam et al., 2016, pp. 75–77). Workplace democracy that restricts employee participation is an example (Stohl and Cheney, 2001). Paradoxes persist over time and create challenging situations.

To investigate our question, we conducted a longitudinal case study (Langley et al., 2013) of how managers in a Danish pharmaceutical firm governed a long-term collaboration with a university and a biotech firm. The collaboration evolved through a relationship between a director (the director) from the pharmaceutical firm and an academic researcher (the researcher) employed at the university and who cofounded the biotech firm. We investigated how the managers responded to a persistent paradox defined by the managers’ desire to control the researcher’s exclusive commitment to them (and their access to evolving commercial assets) and their desire to trust the researcher’s continued sharing of his knowledge with them.

We make three contributions to the control-trust literature. First, our findings suggest a new category of response to control-trust dynamics that we call More-Than responses. More-Than responses are characterized by ‘connecting oppositional pairs, moving outside of them, or situating them in a new relationship’ (Putnam et al., 2016, p. 128). We observed that managers enacted More-Than responses by, for instance, expanding the organizational boundaries of their collaboration and engaging in a playfulness that went far beyond the immediate functions of the governance mechanisms they used. These findings suggest that scholars should move beyond the conceptualization of control and trust mainly as substitutes and complements (e.g., Cao and Lumineau, 2015; Long and Sitkin, 2018).

Second, our findings show that managers enact complementary (Both-And) and creative (More-Than) responses to paradoxical control-trust dynamics through paradoxical thinking, balancing, fulfilling promises, and transcending. This challenges the idea that balancing is managers’ main response to control-trust dynamics (Cardinal et al., 2004; Long and Sitkin, 2006).

Third, by conducting a longitudinal study, we show that managers respond to control-trust dynamics *simultaneously* in and across time, and by doing so, they evolve a complex organizational governance system that we call a ‘governance path’. Our notion of a governance path extends previous research on coordination trajectories (Oliveira and Lumineau, 2017) and governance trajectories (Estrada et al., 2016; Faems and Madhok, 2009; Vlaar et al., 2006b) by emphasizing *paradoxical* control-trust dynamics that persist over time, and by drawing attention to managers’ ongoing creative, reflexive, and targeted actions to ensure the performance and endurance of their interorganizational relationships.

THEORETICAL BACKGROUND

The Control-Trust Dynamics of Substitution and Complementarity

Past research on control-trust dynamics assumes that the concepts of substitution and complementarity capture these dynamics (and the dynamics of contractual and relational governance mechanisms), yet scholars disagree on how this capturing occurs. In the macro-oriented literature on interorganizational relationships, some scholars have argued that contractual and relational governance mechanisms substitute for each other (e.g., Huber et al., 2013), while others have assumed they are complementary (e.g., Poppo and Zenger, 2002). Likewise, in the micro- and meso-oriented research on organizations, some scholars have argued for the complementary relationship (e.g., Sitkin, 1995), while others have suggested the mechanisms are substitutes (e.g., Christ, 2013; Long and Sitkin, 2006; Weibel et al., 2016).

Despite its widespread use, this conceptualization is limiting and lacks a broader, unifying perspective; it has generated conceptual ambiguity regarding both the control-trust relationship and the dynamic interplay of substitution and complementarity. While most scholars have explored control-trust as a dualism in which both are distinct mechanisms (Long and Sitkin, 2018), some scholars have assumed that control

and trust are a duality in which ‘each assume the existence of the other, refer to each other and create each other, but remain irreducible to each other’ (Möllering, 2005, p. 283).

To advance the field and acknowledge that organizations today operate in increasingly dynamic environments with high uncertainty, complexity, and interorganizational collaboration (Cardinal et al., 2004; Sitkin and Long, 2018), leading scholars have called for dynamic, longitudinal, and process studies on how managers synergistically balance their control- and trust-building mechanisms over time and adapt them to changing environments (Cao and Lumineau, 2015; Cardinal et al., 2004; Long and Sitkin, 2018). Our article responds to this call.

Process Perspectives on Control-Trust Dynamics

The process literature on control and trust suggests that factors both internal and external to (inter)organizational relationships affect how their control-trust dynamics evolve over time. First, emphasizing internal factors, scholars have demonstrated that control and trust are connected through self-reinforcing virtuous and vicious loops (Faems et al., 2008; Möllering and Sydow, 2019; Vlaar et al., 2007) and that their interplay is sensitive to initial conditions. For example, Zheng et al. (2008) showed that contractual and relational governances complement each other but are contingent on the partners’ relational intentions. In contrast, other scholars have shown that in longer-term relationships, evolved conditions substitute for initial conditions (Ariño et al., 2014; Inkpen and Currall, 2004). For example, exploring contracts, negotiation, and learning, Ariño et al. (2014) found that learning to contract from past relationships manifests in the contracts’ negotiation time, not merely in contractual details (see also Mayer and Argyres, 2004). Together, these studies suggest that internal factors provide limited understanding of how these dynamics evolve (Brattström et al., 2019).

Second, scholars have also shown how external, contextual factors create discontinuities and destabilize the control-trust balance. For example, Huber et al. (2013) found that contextual events such as goal fuzziness, goal conflict, and goal misalignment triggered oscillation between substitution and complementarity. Keller et al. (2021) explored how the restructuring of a partner’s company disturbed the governance of the relationship to the other partner and changed the tradeoffs between governance mechanisms, concluding that the dynamics of complementarity or substitution cannot be predicted. Exploring the impact of environmental dynamism on control-trust dynamics, Howard et al. (2019) demonstrated that a mix of governance mechanisms can create both functional and dysfunctional behaviours that shift attention from substitution and complementarity and towards whether governance mechanisms converge or diverge. Together, these studies demonstrate how external factors can change control-trust dynamics in ways that complementarity and substitution do not adequately represent.

While the process literature has advanced control-trust studies, it has not yet sufficiently connected internal (managerial) and external (environmental) perspectives of how control-trust dynamics change over time. These perspectives separately reveal key factors

influencing how these dynamics change over time, but together they provide fragmented accounts. Moreover, with exceptions, these process studies remain anchored mainly in substitution and complementarity, which do not address the complexity of these dynamics over time (Brattström et al., 2019; Howard et al., 2019). Finally, although previous studies have explored actors' sensemaking in interorganizational relationships (Vlaar et al., 2006a), the constitution and recursive relationship of control and trust (Sydow, 1998; Sydow and Windeler, 2003), and the management of tensions and contradictions (ibid.), these process studies have not fully developed a constitutive approach to exploring paradoxical control-trust dynamics. Therefore, to extend the process literature, we return to the tension underlying control-trust dynamics: the opposing mechanisms of control and trust with which managers grapple.

A Constitutive Approach to Paradoxical Control-Trust Dynamics

Building on the process literature, we argue that by investigating managers' constitutive responses to paradoxical control-trust dynamics, we can integrate managerial and contextual perspectives and advance the field beyond the substitution-versus-complementarity discussion. We suggest that a constitutive approach to exploring control-trust dynamics prevents overemphasizing either external contextual factors or internal learning processes. Instead, this approach can unveil new responses to control-trust dynamics and explain their implications for the performance and endurance of interorganizational relationships.

A constitutive approach assumes that social interaction among actors brings things into existence and conditions how they develop over time (Putnam et al., 2016, pp. 77–78). Consequently, managers do not merely respond to environmental pressures but 'produce structures, constraints, and opportunities that were not there before they took action' (Weick, 1988, p. 306). The outcome of managers' responses to environmental pressures is an 'enacted environment' (ibid., p. 307) that contains 'real objects' that are not questioned as such but whose meaning is debated and becomes important only when actors incorporate them into events, situations, and explanations (ibid.).

Unlike tensions and contradictions, paradoxes 'create situations of almost impossible choice' (Putnam et al., 2016, p. 75) and draw attention to the 'seeming irrationality and absurdity of the situation[s]' that managers must deal with (ibid.), and they therefore deserve attention. Taking a constitutive approach to studying paradoxical situations emphasizes *managers'* key roles because paradoxical dynamics demand managers' ongoing reflection, creativity, and balancing (ibid.). Building on process research, we assume that managers' responses to paradoxical control-trust dynamics emerge, develop, grow, and terminate over time (Langley et al., 2013, p. 1). Consequently, we also assume that managers sometimes enact control and trust as a paradox, and at other times they do not find control and trust to be contradictory, a variation that a constitutive approach expects, but other perspectives might regard as conceptual confusion or inconsistency.

Building on Putnam et al. (2016), we use three categories of responses to explore managers' responses to paradoxical control-trust dynamics: Either-Or responses, Both-And responses, and More-Than responses. The Either-Or responses 'treat contradictory poles

as distinct phenomena that function independent of each other' (Putnam et al., 2016, p. 122). These responses develop through defensive reactions and mechanisms, selection or privileging of one pole, and separation or segmentation (*ibid.*). Hence, in the control-trust literature, Either-Or responses match the dynamics of substitution or 'antithetical' balancing processes (Long and Sitkin, 2006, p. 93).

Both-And responses differ from Either-Or responses by 'treating opposites as inseparable and interdependent' (Putnam et al., 2016, pp. 123–24). Both-And responses involve paradoxical thinking, vacillation or spiralling inversion, and integration and balance (*ibid.*). Consequently, Both-And responses resemble complementary dynamics, 'synergistic' balancing processes (Long and Sitkin, 2006, p. 93), and duality (Möllering, 2005) in the control-trust literature.

Finally, More-Than responses 'focus on connecting oppositional pairs, moving outside of them, or situating them in a new relationship' (Putnam et al., 2016, p. 128). These responses involve reframing and transcendence, connecting third spaces and dialogue and reflective practice and serious play (*ibid.*). To our knowledge, the control-trust literature has not previously discussed More-Than responses.

To analyse the kinds of governance mechanisms that managers enact in their responses, we draw on Keller et al.'s (2021) typology of alliance governance mechanisms, which combines level of codification (formal versus informal) with means of enforcement (contractual versus relational), resulting in four mechanisms: formal contractual, formal relational, informal contractual, and informal relational governance mechanisms. Integrating this typology into our constitutive approach, we assume that the objects that managers deal with are governance mechanisms, yet the significance of these mechanisms depends on how managers enact them (which emphasizes the managers' actions rather than the governance mechanisms' content). Whether a formal contractual mechanism is enacted as a signal of control or trust remains an empirical question.

To support our analysis of managers' enactments of environmental dynamism, we draw on Eisenhardt et al.'s (2010) dimensions of ambiguity, defined as 'lack of clarity, such that it is difficult to interpret or distinguish opportunities', and unpredictability, defined as 'disorder or turbulence, such that there is no consistent pattern of opportunities' (Davis et al., 2009, p. 420). We explore shifts in the industrial and scientific context along these dimensions.

METHODS

Research Site and Case Selection

To investigate our question, the first author conducted a longitudinal study, from January 2009 to December 2011, of how managers in the Danish pharmaceutical company Lundbeck, which specializes in treatments for brain disorders, governed exploratory collaborations with external academic partners (see also Vedel and Kokshagina, 2021). At the time of data collection, Lundbeck was implementing a new, more-exploratory strategy that involved intensified collaboration with external academic groups. Attempting to

manage these collaborations, a core group of executive managers encountered significant tension related to balancing control and trust.

The pharmaceutical industry is a relevant context for studying how managers deal with control-trust tensions in their interorganizational relationships. The industry in general, and neuroscience in particular, reflects high levels of velocity, complexity, ambiguity, and unpredictability as well as long life cycles and highly regulated R&D processes. Moreover, pharmaceutical companies rely heavily on collaborations with academic researchers who are at the forefront of their scientific fields (Vedel, 2021; Vedel and Irwin, 2017). In this context, industrial managers face tension in organizational, relational, and environmental domains.

Lundbeck is a particularly relevant case since its new strategies implied venturing into more-basic research to understand the fundamental biology of complex disorders such as Alzheimer's and Parkinson's diseases and developing innovative drugs accordingly. Since Lundbeck's managers wanted to maintain its flexibility and not establish new research areas in house, adopting this strategy required initiating new collaborations with academic researchers and learning how to govern these relationships.

From January 2009 to December 2011, the first author had full access to Lundbeck's research management, and from January 2011 to February 2014, she kept in contact with the core group of executive research managers who were responsible for research collaboration. This access to managers' reflections was unique in an otherwise secretive industry and allowed us to explore Lundbeck's management of collaborations during significant organizational change.

Using theoretical sampling (Glaser and Strauss, 1967), we selected one case among six collaborations that the group of executive managers initiated. The case involved a collaboration between a university and a biotech firm that evolved through an interpersonal relationship between a director from Lundbeck and an academic researcher who was employed at the university and cofounded the biotech firm. We found that the case would likely extend process theory on control and trust dynamics because it unfolded over several years (2004–09), the group of managers changed its governance setup multiple times, they creatively connected multiple governance mechanisms to manage their relationship with the researcher, and they considered it an opportunity to learn. We analysed the case across levels of analysis: we explored how the collaboration evolved through an interplay of individual- and organizational-level actions and events.

The timelines of the case and the data collection overlapped as follows: Lundbeck's collaboration with the academic researcher developed from 2004 to 2011 (and beyond). The data collection occurred from January 2009 to December 2011. The first author studied the first phases of the collaboration (2004–08) through retrospective accounts in interviews and archival material. She explored the last phases (2009–11) in real-time observations of meetings, formal and informal interviews in which participants reflected on present events, and examination of internal documents. During her contact with the core group of executive managers from 2011 to 2014, she discussed initial analyses and continued to be informed on organizational changes at Lundbeck.

Data Sources

Our study relied on a broad range of data sources, including interviews, observations, and archival material. The first author conducted 50 interviews with managers and scientists at Lundbeck, each of which lasted for one hour on average. She selected interviewees based on their involvement in collaborations with external academic groups. The interviews were recorded and/or captured in detailed field notes and explored topics related to industrial trends, the rationale for the new strategy, the management of collaborations, shifts in environmental dynamism, tensions and challenges, and key learnings from the collaborations. The first author also engaged extensively in both participant and non-participant observation during the three years of the data collection. She followed the core group of executive managers responsible for developing new research strategies and for initiating, monitoring, and evaluating external collaborations with academic partners. She recorded data from the observations in detailed field notes, and topics that emerged during these observations were later discussed in interviews. Finally, the first author collected archival material in the form of internal documents related to strategies and meetings about collaborations and collaborative documents, when possible. See [Table I](#) for details on these data sources.

Data Analysis

We analysed our data in three steps, using strategies for analysing process data and abductive analysis, which involves producing new theories based on surprising research evidence. Adopting a narrative strategy (Langley, 1999), we organized our data into a detailed chronology that included contextual details and stories, meaning, and mechanisms. Next, we used a temporal bracketing strategy (Langley, 1999) to divide the case into four periods, each defined by managers' enactments of shifts in the environmental dynamism. Temporal bracketing fits our theoretical perspective because it acknowledges that capturing constitution is hard; therefore, dividing the data into successive periods and comparable units makes it possible to explore how actions in one period led to changes in the next (Langley, 1999). We carefully described key events, contextual changes, managerial responses, governance mechanisms, and outcomes and implications, which resulted in a 20-page case narrative that formed the basis for our subsequent abductive analysis.

Adopting an abductive approach (Klag and Langley, 2013; Mantere and Ketokivi, 2013; Tavory and Timmermans, 2014; Timmermans and Tavory, 2012), we engaged in an iterative process to analyse our empirical material in relation to the relevant literatures. First, by investigating the relations among the managers' accounts of shifts in the environmental dynamism (Eisenhardt et al., 2010), the governance mechanisms they created (Keller et al., 2021), and their implications for control-trust dynamics (Huber et al., 2013), we found that our phenomenon of interest was managers' responses to paradoxical control-trust dynamics (Putnam et al., 2016).

Second, we explored variation in the managers' responses to these dynamics (Putnam et al., 2016). We investigated which categories of responses the managers enacted within and across the phases. We noticed that the managers' responses in time differed from

Table I. Overview of the data sources

Data type	Details
Interviews	<p>50 interviews with company managers and scientists, including</p> <ul style="list-style-type: none"> • the members of a core group of executive managers who were responsible for external collaborations, including the executive head of research, the head of research in Denmark, and the divisional director of molecular neurobiology – each interviewed four times • the members of a team of divisional directors, including the directors of medicinal chemistry, pharmacology, and molecular neuroscience – each interviewed four times • the members of the research management board, including the executive head of the research, the head of non-clinical safety research, the head of corporate patents and trademarks, the head of research in the USA, and the head of external affairs – each interviewed one time • business developers involved in contracting, including one business developer in Denmark and two business developers in the USA – each interviewed one time • scientific staff involved in external collaborations that were managed from Denmark, including the chief scientist for Alzheimer's Disease, the chief scientist for Parkinson's disease, the head of the department of molecular neurobiology, five scientists, one postdoc fellow, and two PhD scholars – each interviewed one time • scientific staff involved in external collaborations that were managed from the USA, including seven scientists from the USA research site in New Jersey – each interviewed one time
Observation	<p>Approximately 4000 hours of participant and non-participant observation, conducted from January 2009 to December 2011, including</p> <ul style="list-style-type: none"> • observation of weekly meetings with the core group of executive managers who were responsible for external collaboration • meetings between the core group of executive managers and internal specialists within law, finance, taxation, and business development • meetings between the core group and external collaborators • internal meetings about research strategy, related to development, implementation, evaluation, and learning • workshops exploring learning across collaborations • participation in everyday practices, including townhall meetings, informal lunches, and conversations during coffee breaks
Archival material and internal documents	<p>Extensive archival material, including</p> <ul style="list-style-type: none"> • meeting material (e.g., agendas, presentations, minutes, and documents) • strategy material (e.g., presentations, workshop material, and conclusions) • project review material (e.g., progress reports and evaluations) • research project descriptions and grant applications • contracts and draft agreements • internal communications, e.g., newsletters • white papers and handbooks • email correspondence

their responses across time (Both-And versus More-Than responses) and that this variation came from the managers' enactments of different paradoxes and time horizons. Third, we explored the processes through which these varied responses occurred. We explored how and through which specific actions the managers enacted different responses, and we compared these actions with those in the literature on, for example, balancing (Cardinal et al., 2004; Long and Sitkin, 2006). This step led us to discover that the managers' responses unfolded through paradoxical thinking, balancing, fulfilling promises, and transcending.

Fourth, we considered the relationships among the enacted responses and the overall governance and success of the managers' interorganizational relationships. We found that the responses occurred simultaneously (which differs from Huber et al.'s observation of changing but sequential dynamics), that they formed what we called a 'governance path' (which we considered in relation to past research on trajectories, e.g., Oliveira and Lumineau, 2017), and that they collectively seemed to positively affect the performance and endurance of the relationship with the researcher and his organizations (which we considered in relation to relevant past research, e.g., Brattström et al., 2019; Das and Teng, 2001; Inkpen and Currall, 2004; Vlaar et al., 2007).

Finally, we explored the fit, plausibility, and relevance of our findings. We examined whether the empirical material supported our theoretical claims or if adjustments were required. We compared our theory with others in the control-trust literature, and we articulated contributions that build on but also challenge current assumptions in this literature.

FINDINGS

We found that the Lundbeck managers adopted two categories of responses to paradoxical control-trust dynamics: Both-And and More-Than responses. We present our case by following our temporal bracketing strategy, describe the responses through empirical examples, and explore the responses' implications for the managers' development of a governance path.

Case Description

Our case developed from 2004 to 2009 in four phases. Each phase entailed a shift in the environmental dynamism, to which the managers responded by enacting governance mechanisms.

First phase (2004–05): Establishing an informal, multifaceted conversation. In 2004, a director of molecular neurobiology at Lundbeck invited a researcher of medical biochemistry employed at a Danish university to give a scientific talk at Lundbeck. The researcher's forthcoming publication in a leading journal occasioned the talk. The following month, the researcher, a Danish colleague, a German colleague, and nine additional coauthors published the article, which described a newly discovered receptor's involvement in cell death. The authors found that the receptor functioned as a molecular switch and was

involved in both nerve growth and neuronal cell death. The publication received massive attention in the scientific community.

Later in 2004, the researcher and his Danish colleague invited Lundbeck's executive head of research and the director to a meeting at the university to discuss the article. Prior to the meeting, the partners had signed a non-disclosure agreement, and the researcher and his Danish colleague described their findings. The non-disclosure agreement was the first interorganizational formal contractual governance mechanism that the partners developed to facilitate a joint scientific conversation and to prevent the partners from disclosing shared confidential information.

Still governed by the non-disclosure agreement, the researcher and director engaged in a two-year scientific discussion about the opportunities that the discovered receptor presented, including both exploration of its multiple functions and exploitation of its potential through drug discovery to prevent neuronal cell death in Alzheimer's and Parkinson's diseases. The director described his interaction with the researcher as multifaceted, covering both scientific details and their wider implications, and unfolding as highly motivated conversation between 'confidants'. He explained,

We have very detailed discussions where we meet and discuss, look at genes basically and discuss 'that we don't believe in' and 'that we don't believe in either,' and 'have you thought about making that control?' ... really like hardcore scientific discussions 2026 And then sometimes we have those more general discussions ... where he says 'now this and that happened' ... It's typical that he calls me on a Sunday night to say that now he has got some result and 'it's very exciting' and then we discuss it.

This ongoing discussion was an interpersonal, informal relational governance mechanism that continued throughout the director's and researcher's collaboration.

In this early phase, the environmental dynamism in the field was both highly ambiguous and unpredictable. The researcher's initial work revealed the receptor's multiple roles, but what these were and how different conditions triggered them were still unclear. Moreover, potential pathways to commercial opportunities were very uncertain and changing; hence, the managers struggled to understand how they could organize themselves around these opportunities.

Second phase (2005–06): Institutionalizing exploration and exploitation in the field. In 2005, the researcher and his German colleague established a biotech firm and filed seven patent applications based on the initial discovery. The patent applications described animal models and techniques useful for target validation. The director described the cofounders' patent strategy as 'unusually aggressive', suggesting that the models and techniques were very immature and not likely to be accepted as patents. Yet, he acknowledged that the researcher had successfully built a patent portfolio and was impressively proactive in advancing the field. The filed patent applications constituted a control mechanism that established the cofounders' ownership of the target validation assets and that anticipated a formal collaboration between the partners.

Later in 2005, the Lundbeck Foundation, the majority shareholder of Lundbeck A/S, awarded USD 8 million to the researcher and his Danish colleague to establish

a center of excellence at their university. The center focused broadly on membrane receptors in neuronal diseases to characterize the role of the discovered receptor's family in health and diseases. After negotiation, the researcher became the center's director, which further established his leading role. The center constituted yet another control mechanism (which was also a formal contractual governance mechanism between the Lundbeck Foundation and the university), through which the Lundbeck Foundation controlled the researcher's commitment to a specific research agenda, and the researcher, through his leading role, controlled the interdisciplinary advancement of the field.

In this phase, the environmental dynamism began to change. The researcher's activities after his publication cleared a path for exploring the receptor's role under multiple conditions. Distinguishing these roles and conditions enabled the center of excellence, which reflected progress towards systematically identifying the receptor's key features. Likewise, the field's unpredictability and the associated uncertainty of capturing opportunities decreased with the cofounders' description of animal models and target validation techniques, which prepared the way for commercial testing.

Third phase (2006–07): Formalizing the conversation (primarily commercially). During the following two years (2006–07), the cofounders pressured the director to initiate a formal collaboration focused on target validation. They suggested using the pending models and techniques to clarify commercial opportunities early. The cofounders sent a prospectus to Lundbeck, which the managers referred to as 'the first business contact'.

Next, the biotech firm's chairman contacted the director concerning an opportunity for the firm to participate in a large EU research project exploring the link between membrane receptors and neuronal disorders. The biotech firm's participation relied on financing that the collaboration with Lundbeck would provide. The director found the proposal 'scientifically interesting' but also reflecting 'completely unacceptable demands'. He noted that 'the main driver for the cofounders was the attractive funding', which did not match Lundbeck's interest in an 'exploratory effort'.

Nonetheless, in 2007, the Lundbeck managers found a way to balance these different interests and signed a contract with the cofounders. According to the contract, Lundbeck paid for a licence to use the cofounders' models and techniques in a joint target validation project, which enabled the cofounders' participation in the EU research project. The contract comprised a mutual, eight-year confidentiality agreement and a collaboration agreement for the partners to 'work closely and openly together' (from contract) to validate the receptor opportunity, develop proof-of-concept, and work to create product candidates for commercialization. This target validation agreement was an interorganizational formal contractual governance mechanism that tied the researcher to Lundbeck for three years and gave Lundbeck a first right to purchase the biotech firm and/or the patent applications, which provided Lundbeck with potential future ownership control.

In this phase, the environmental dynamism changed again. The EU research project conducted deep and broad investigation of the receptor's role in multiple neuronal

disorders, and the target validation collaboration promised to show how Lundbeck could capture the receptor pathway's potential through drug discovery.

Fourth phase (2008–09): Formalizing/controlling the multifaceted conversation. In 2008, the director and executive head of research decided to acquire the patent applications from the biotech firm. Their decision stemmed from several significant changes. Competitors were becoming interested in the researcher's work, which coincided with the publication of new data from the center of excellence, the EU research project, and a research group at Yale University with which the managers collaborated. By connecting these data, the director saw a clearer way forward, which had important implications for his next steps. He explained,

Then another group, from Yale, made a discovery that there was a protein or certain diseases caused by a certain protein called [name of protein] and the group found that [name of receptor] could be involved in it and suddenly, we had a very clear path forward for how we could see it could go into the clinic.

Also driving the managers' decision was the target validation contract that gave Lundbeck first right to acquire the patent applications and the fact that Lundbeck, according to the head of research, 'had money to spend' due to the company's strategic shift to more-exploratory strategies.

Yet, attaining the patent applications was not straightforward because it required identifying who had participated in the research leading to the applications. Clarifying this involved studying lab logbooks at the university. Moreover, the purchase involved negotiations with the cofounders, who, according to the head of research, 'focused more on their personal income than on next steps'. The managers prepared these negotiations in internal meetings, which included internal finance, law, and taxation experts. Eventually, the acquisition occurred, which was an interorganizational formal contractual governance mechanism between Lundbeck and the cofounders.

The director acknowledged that the patent applications' value relied solely on continued collaboration with the researcher. The acquisition threatened this plan, due to both the difficult negotiations and change of ownership, which altered the basic dynamics of the relationship. Consequently, the director and researcher created two additional formal contractual governance mechanisms. The first was a consultancy agreement, an interorganizational formal contractual governance mechanism, according to which Lundbeck would pay a fee for receiving advice from the cofounders on how to conduct target validation. The second was a basic research contract, yet another interorganizational formal contractual governance mechanism, according to which Lundbeck would pay an annual fee to the university to continue the researcher's exploration of the receptor. The basic research contract had a broad scope but also constraints. It gave Lundbeck first right to access new knowledge concerning the receptor developed by the researcher in the patent area. These constraints turned out to be problematic due to the researcher's broad network of academic collaborators, who were automatically drawn into the contractual controls. The managers eventually amended the contract to ensure that it involved only the researcher's work.

In this phase, the environmental dynamism shifted again because of new data. These data reduced ambiguity by distinguishing key features of the receptor's behaviour.

Despite continued high turbulence in the environment, the managers reduced unpredictability by combining data from diverse groups, which established a way to test commercial opportunities. Yet, because the new data clarified a path not only for Lundbeck but also for its competitors, the managers were forced to safeguard their relationship with the researcher.

Enacted Responses to Paradoxical Control-Trust Dynamics

The managers' relationship with the researcher evolved because of the managers' responses to paradoxical control-trust dynamics. Although these dynamics varied over time, they reflected an overall theme of controlling the researcher's exclusive commitment to Lundbeck (and Lundbeck's access to commercial assets) and trusting the researcher's continued sharing of his knowledge with Lundbeck. We observed that the managers' responses to this theme differed according to whether they focused on in time or across time: depending on whether the managers focused on addressing immediate tensions or tensions associated with developing the long-term relationship, they developed different responses. When focused on in time, the managers developed Both-And responses, which they enacted through paradoxical thinking and balancing (described later). When focused on across time, they developed More-Than responses by fulfilling promises and transcending control and trust, which entailed expanding the organizational boundaries of the relationship, searching for novel and creative responses, and engaging in serious playfulness (also described later). [Table II](#) provides an overview of these responses. We present examples in what follows.

Both-And responses to paradoxical control-trust dynamics in time. Both-And responses involve treating 'opposites as inseparable and interdependent', and hence, actors 'avoid segmenting opposites or privileging one pole over the other' (Putnam et al., 2016, pp. 123–24). These responses are equivalent to complementary control-trust dynamics, which are at the center of the control-trust literature (e.g., Cao and Lumineau, 2015; Huber et al., 2013). We identified two Both-And responses: paradoxical thinking and balancing.

Paradoxical thinking 'aims to make latent tensions clear and explicit', and when managers use paradoxical thinking, they increase their 'cognitive abilities to recognize opposites, question and reflect on them, and shift mental sets' (Putnam et al., 2016, p. 124). Consequently, managers who engage in paradoxical thinking eventually become better at dealing with paradoxical situations. In our case, we found that managers engaged in paradoxical thinking consistently and that this response set them up to balance control and trust (which we explain later).

For example, in phase 3, when negotiating the terms of the formal collaboration with the researcher, the managers were very explicit about the tensions they perceived between developing a formal collaboration focused narrowly on validating specific drug targets and continuing a far-reaching, multifaceted discussion with the researcher. During meetings at Lundbeck, the director would often object to an excessively 'narrow-minded focus' on target validation given that, as he argued, they were still 'dealing with immense uncertainty around the basic functions of the receptor'.

Table II. Overview of managers' responses to paradoxical control-trust dynamics and their implications

	Phase 1 (2004–05)	Phase 2 (2005–06)	Phase 3 (2006–07)	Phase 4 (2008–09)
Key events	<ul style="list-style-type: none"> • Scientific talk: A director of molecular neurobiology invites a researcher of medical biochemistry to give a scientific talk • Publication: The researcher and his coauthors publish their discovery in a leading scientific journal • First meeting: The director and researcher and their colleagues have a first meeting at the university • Continued discussion: The director and researcher initiate an ongoing scientific discussion 	<ul style="list-style-type: none"> • Biotech firm: The researcher and his German colleague cofound a biotech company based on funding from a public investment company • Patent applications: The cofounders file seven patent applications that describe animal models and techniques for validating drug targets • Center of excellence: The Lundbeck Foundation awards a center of excellence to the university; the center focuses on membrane receptors in neurological disorders; researcher becomes director 	<ul style="list-style-type: none"> • Pressure to formalize: The cofounders put pressure on Lundbeck to develop a formal collaboration • Two wishes: The cofounders (and chairman) express two wishes: they want to test their patent technologies and participate in an EU research project for which they lack funding • Target validation contract: Lundbeck and the cofounders create a target validation contract that allows Lundbeck a first right to purchase the patent applications and the cofounders to enter the EU project 	<ul style="list-style-type: none"> • Competitors move: Competitors express interest in the membrane receptor and are starting to move • New data: The center of excellence, the EU project, and an American group based at Yale produce new data • Pressure from inside: The management of Lundbeck pressures the managers to enact their strategy by spending money on external collaborations and acquisitions • Three new contracts: The managers acquire the patent applications and create a consultancy agreement with the cofounders and a basic research agreement with the university • New data reduce the ambiguity, which motivates the managers to pursue the commercial opportunities
Shifts in the environmental dynamism	<ul style="list-style-type: none"> • The discovery reveals an emerging field with high ambiguity and unpredictability 	<ul style="list-style-type: none"> • The ambiguity and unpredictability are still high, but the center and biotech firm reduce them 	<ul style="list-style-type: none"> • Ambiguity and unpredictability are still high, but the EU and target validation project reduce them 	<ul style="list-style-type: none"> • New data reduce the ambiguity, which motivates the managers to pursue the commercial opportunities

(Continues)

Table II. (Continued)

<p>Governance mechanisms</p> <ul style="list-style-type: none"> The first meeting is based on a non-disclosure agreement, i.e., a <i>formal contractual governance mechanism</i> The director and researcher's ongoing scientific discussion is an <i>informal relational governance mechanism</i> 	<ul style="list-style-type: none"> The patent applications constitute a <i>control mechanism</i> The center of excellence is a <i>control mechanism</i> (and a <i>formal contractual governance mechanism</i> between other partners) 	<ul style="list-style-type: none"> The target validation contract is a <i>formal contractual governance mechanism</i> The EU research project is a <i>control mechanism</i> (and a <i>formal contractual governance mechanism</i> between other partners) 	<ul style="list-style-type: none"> The patent application acquisition is a <i>formal contractual governance mechanism</i> The consultancy agreement is a <i>formal contractual governance mechanism</i> The basic research agreement is a <i>formal contractual governance mechanism</i>
<p>Enacted responses to paradoxical control-trust dynamics in time</p>			
<p>Category of response</p>	<p>Both-And</p>	<p>Both-And</p>	<p>Both-And</p>
<p>Enacted responses (examples)</p>	<p>Paradoxical thinking:</p> <ul style="list-style-type: none"> The managers make explicit the paradox of controlling in an immature field and trusting its further development <p>Balancing:</p> <ul style="list-style-type: none"> The managers balance across formal (non-disclosure) and informal (discussion) mechanisms and across different domains of activity and interest (the first meeting focuses on commercial opportunities, while the ongoing scientific discussion goes in many directions) 	<p>Paradoxical thinking:</p> <ul style="list-style-type: none"> The managers make explicit the paradox of controlling commercial opportunities through ownership (patent applications) and trusting the continued advancement of the field (the center) <p>Balancing:</p> <ul style="list-style-type: none"> The managers balance across different domains of activity and interest (the center of excellence reflecting science and the biotech/patents reflecting commercial interests) 	<p>Paradoxical thinking:</p> <ul style="list-style-type: none"> The managers make explicit the paradox of controlling the researcher's commitment in a collaboration and trusting that he will continue to share his knowledge generously <p>Balancing:</p> <ul style="list-style-type: none"> The managers balance different domains of activity and interest (the basic research agreement reflecting science and the acquisition and consultancy agreement reflecting commercial interests)

(Continues)

Table II. (Continued)

Implications	Performance	Performance	Performance
Enacted responses to paradoxical control-trust dynamics across time			
Category of response	More-Than	More-Than	More-Than
Enacted responses (examples)	<p>Fulfilling promises:</p> <ul style="list-style-type: none"> In their ongoing scientific discussion, the director and researcher articulate a three-part promise to explore scientific opportunities, advance the research, and work together <p>Transcending:</p> <ul style="list-style-type: none"> The managers use the ongoing scientific discussion to transcend control-trust issues, that is, as a <i>novel and creative response</i> to the paradox of controlling the conversation and trusting that it will rest on generosity 	<p>Fulfilling promises:</p> <ul style="list-style-type: none"> The managers enact the cofounders' patent promise to explore commercial opportunities together, that is, anticipating that Lundbeck will eventually take over the patents; they also enact the center as reinforcing their promise to support the research <p>Transcending:</p> <ul style="list-style-type: none"> The managers enact external controls (the patents and the center) as part of their governance of the relationship, thereby <i>expanding the boundaries of the organizational context</i> 	<p>Fulfilling promises:</p> <ul style="list-style-type: none"> The managers enact the target validation contract as the fulfillment of their promise to work together and to reinforce the anticipation that they will eventually take over the patents <p>Transcending:</p> <ul style="list-style-type: none"> The managers enact external controls (the EU project) as part of their governance of the relationship, thereby <i>expanding the boundaries of the organizational context</i>
Implications	Endurance	Endurance	Endurance
			<p>Transcending:</p> <ul style="list-style-type: none"> The managers enact the three contracts together as a <i>novel and creative response</i> to a paradox of controlling ownership and trusting continued activity that will increase the value of the patents They also engage in <i>reflective practice and serious playfulness</i> as they renegotiate the basic research contract

By constantly drawing attention to this tension and not accepting actions that would privilege either commercial testing or scientific exploration, the managers gradually refined their responses to the paradoxical situations. Eventually, the managers began to consider ‘learning’ to be a privileged outcome since making the tensions explicit clarified that reaching certainty regarding commercial and scientific opportunities was not an option. One manager explained,

We knew at the time that if we thought it all the way through to the clinic, we would run into some [problems], then it would be hard, there were some weak indications, but we also knew it was very early biology, so either it would turn out to be a bad investment, that we would get some discoveries that did not lead anywhere, or else we would learn something. And that’s what we did.

By engaging in paradoxical thinking, the managers enacted a paradox of controlling the researcher’s commitment within a too-narrow scope and trusting that the researcher would continue to provide them with new knowledge that would eventually develop the fundamental biology.

In phase 4, when developing the three contracts, the managers also engaged in paradoxical thinking regarding the researcher’s many roles. They argued that these roles were both a source of frustration, because it was not always clear which organization the researcher operated from, and an advantage to them. For instance, during meetings at Lundbeck, the managers openly discussed the researcher’s concern for his personal income, which they had to take seriously in developing an appropriate acquisition offer, and his profound – almost idealistic – concern for the advancement of the research field. The director explained, ‘it [his many roles] is an advantage for us because it gives us access and many different entry points, so in that way it is only an advantage that he is involved so many places because through him our interface becomes sort of bigger’.

Balancing entails ‘searches for ways to embrace both poles through accepting the contradiction, working through the tensions, meeting competing demands, and finding an equilibrium point’ (Putnam et al., 2016, p. 124). This definition fits with past control-trust literature that, building on Sutcliffe et al. (2000), defines balance as ‘a state where an organization exhibits a harmonious use of multiple forms of control’ (Cardinal et al., 2004, p. 412). In our case, we found that within each phase of the relationship, the managers balanced control and trust across both different types of governance mechanisms (formal/informal and contractual/relational) and different domains of activity and interests (commercial, scientific, collaborative).

For example, in phase 1, the managers achieved a balance of control and trust by connecting the non-disclosure agreement (a formal contractual governance mechanism) to the researcher’s and director’s ongoing scientific discussion (an informal relational governance mechanism). The non-disclosure agreement was established to regulate the conversation between the managers and the researcher and his colleagues at the university during their first meeting; however, because it was enacted in concert with the ongoing scientific discussion, the agreement implied that the director and researcher could engage in open conversations that went far beyond the first meeting’s focus. By making this connection, the managers enacted a paradox in which they controlled how

the knowledge they exchanged with the researcher would be shared outside their collaboration and trusted that the researcher would continue to help both detect and interpret the new knowledge that resulted from his academic engagements in the field. The director explained,

They do so many new things that we would never do because we are more streamlined and controlled in what we do, where they are a little more outgoing ... Sometimes it is extremely specialized and then you cannot use it but that's where his [the researcher's] way of looking at results is good for us because he's like our antenna in that environment when something comes out of it.

In phase 3, the managers balanced two formal contractual mechanisms: the target validation contract and the EU research project. Although the research project did not involve direct collaboration between Lundbeck and the researcher, it was written into the target validation contract since Lundbeck, as part of the agreement, paid for the cofounders' participation in the EU project. Although they were both formal contractual governance mechanisms, the two contracts spanned commercial and scientific activities and interests, with the result that the relationship continued to accommodate both. By balancing these two governance mechanisms, the managers enacted a paradox of controlling their access to assets of potential commercial value (that were tested at Lundbeck) and trusting that the researcher's involvement in the EU research project would increase the value of these assets over time. The director explained,

Our intention is for this field to be explored as much as possible. So, the more energy they can put into it, the better. On the one hand, we can see that they are in a terrible dilemma if they want to spin out and make their own firm. But on the other hand, we would also be upset if they started making their own companies that would compete against ours. So, you have to try to find that balance.

Through paradoxical thinking and balancing, the managers avoided privileging one pole over the other and, instead, enacted control and trust as inseparable yet independent poles. We now discuss the More-Than responses, which the managers enacted simultaneously but with different results.

More-Than responses to paradoxical control-trust dynamics across time. According to Putnam et al. (2016, p. 128), More-Than responses involve 'connecting oppositional pairs, moving outside of them, or situating them in a new relationship'. Unlike Both-And responses, More-Than responses do not have an equivalent in the control-trust literature. We found two More-Than responses: fulfilling promises and transcending. Transcending is well known in the paradox literature, but fulfilling promises may be particular for paradoxical control-trust dynamics.

Fulfilling promises entails enacting governance mechanisms to fulfil past promises and to articulate promises for the future. In this way, fulfilling promises connects the past and

future in the present, and our definition is inspired by the temporality literature (e.g., Schultz and Hernes, 2020).

For example, in phase 4, the managers acquired the patent applications as the fulfilment of a promise that the partners had articulated in phase 1 and reinforced in phases 2 and 3. In their discussions, the director and researcher had promised to explore together the commercial opportunities of the receptor discovery. They enacted this promise as an informal contractual governance mechanism in phase 2 when the cofounders filed the patent applications, which both enabled the target validation project and anticipated that Lundbeck would eventually purchase the patent applications to fully control them. This promise was further reinforced in phase 3 when the managers developed both a licence to use the patent models and techniques in their target validation, and requested a first right to purchase the patent applications. By acquiring the patent application as the fulfilment of a promise, the managers enacted a paradox of trusting that control would be needed in the future. A manager explained,

We knew that we took a calculated risk concerning how attractive these models were and the biology we saw and the data they presented us with. But we also knew it would take a few years to mature them. If we took a chance – and we knew that at some point, we would be met with demands for relating it to the clinic – we might go out and find something. Of course, we had some ideas on how we could do it because it was a protein so maybe we could do some quick tests and stuff like that early on, we did not know if any of it would work, but we had some ideas on how we could probably start including tests that allowed us to increase the likelihood of it.

In phase 4, the managers also initiated their consultancy agreement with the cofounders as the fulfilment of a promise to work together. The managers and the cofounders had articulated this promise during their discussions and reinforced it in phase 3 by developing a formal, joint collaboration on target validation. Moreover, the filing of the patent applications was an important step that enabled collaboration on testing targets – a collaboration that was jeopardized by Lundbeck's acquisition of the patent applications, which placed all commercial assets on Lundbeck's side. Fulfilling the promise of continued collaboration was important for exploring commercial opportunities because it ensured that the relationship endured after the acquisition of the patent applications. By establishing the consultancy agreement as the fulfilment of a promise, the managers again enacted a paradox of trusting (anticipating) the need for future control.

Transcending entails 'position[ing] opposites in a novel relationship to each other by moving outside of a paradoxical system to a new level of meaning or by expanding the boundaries of an organization's context' (Putnam et al., 2016, p. 129). In our case, we found several forms of transcendence that, together, allowed managers to expand the organizational boundaries of the collaboration, search for creative solutions, and engage in playfulness that went far beyond the immediate functions of the governance mechanisms.

We observed transcending as expanding the boundaries of the organizational context. For example, in phases 2 and 3, the managers enacted governance mechanisms, which others put in place, as part of their relationship: the center of excellence and the EU

research project. This enactment acknowledged that although the formal relationship involved Lundbeck, the university, and the biotech firm, its organizational context was much wider and included both Lundbeck's other scientific collaborators (e.g., the group from Yale) and the researcher's extensive network of collaborators. This wider organizational context mattered not only for building a strong, broad knowledge base but also for dealing with paradoxical control-trust dynamics. By expanding the boundaries of the relationship to include the center of excellence and the EU project, the managers could move beyond the paradox of controlling the relationship's organizational boundaries and trusting that these boundaries were diffuse and allowed relevant knowledge to leak in.

We also found transcending in the form of searching for novel and creative responses. In phase 4, the managers encountered a paradoxical situation whereby purchasing the patent applications would fulfil a promise but also annul the target validation contract and their collaboration with the researcher. They needed the researcher so that they could continue the target validation testing in house and maintain their 'antenna' in the scientific community. Hence, the managers engaged in a creative process of developing an arrangement that would move beyond control and trust as opposites and enable collaboration on multiple fronts. The solution that emerged from meetings with internal experts was the combined purchase of the patent applications and development of a consultancy and the basic research funding agreement. The director explained,

Our assessment was that a large part of the patents would actually never be issued, we knew that, but what was attractive to us was actually to have the access secured, and that was why we made this construction where we did not only give them a check for the IP but said that 'you get some money from the IP and then you get some money for research collaboration and then you get some consulting fees'.

The novelty of their solution was the development of separate yet interconnected formal contractual mechanisms for all forms of interactions with the researcher. Through this creative solution, they moved beyond the paradox of controlling the researcher's commitment to Lundbeck and trusting that he would continue to generously interact with them.

Finally, we observed transcending in the form of serious playfulness. In phase 4, the managers developed a contract with the university that anticipated the researcher's continued basic research in areas relevant to the patent applications and that gave Lundbeck the first right to access new knowledge in these areas that the researcher developed. Although this was meant to accommodate both the managers' and researcher's interests, it had unintended consequences related to the researcher's wide network. The researcher's many collaborators were automatically drawn into the agreement, which created a significant conflict at the university and profoundly concerned the managers because it threatened to ruin the researcher's wider connections from which the managers were benefiting. Consequently, by engaging in experimentation rather than rational arguments and challenging normal boundaries for contract negotiation by playing with multiple meanings, the managers renegotiated the contract with the university to ensure that only the researcher was automatically tied to Lundbeck. In this phase, by accommodating

the unintended consequences, the managers moved beyond the paradox of controlling their access to the researcher's knowledge and trusting that the researcher's unrestricted interactions with collaborators would benefit Lundbeck in the long run. We now explore the wider implications of the managers' responses for the performance and endurance of the relationship.

Implications of Combined Both-And and More-Than Responses: A Governance Path

By adopting a constitutive approach to study managers' responses to paradoxical control-trust dynamics, we found that they enacted Both-And and More-Than responses simultaneously, not sequentially. Their combined responses in time and across time resulted in what we call a 'governance path', which can help us understand how managers' responses to control-trust paradoxes affect the performance and endurance of their inter-organizational relationships (see also Vedel and Gernaldi, 2020). We define a governance path as a complex organizational governance system that managers evolve by enacting responses to paradoxical control-trust dynamics simultaneously in and across time. While the responses might not always succeed, managers' attention to these dynamics in and across time create the best conditions for partners' performance in the moment and ensure their future relationship.

Our concept of a governance path extends previous research on 'coordination trajectories', defined by Oliveira and Lumineau (2017, p. 1043) as 'the arrangement of coordination dynamics across the three phases of the building project' and 'governance trajectories', defined by Vlaar et al. (2006b, p. 100) as 'sequences of interrelated decisions that are made to influence the behavior of participants in inter-organizational relationships during successive stages of the cooperative life-cycle' (see also Estrada et al., 2016; Faems and Madhok, 2009) by emphasizing the persistence of paradoxical control-trust dynamics and, therefore, the necessary recursiveness and simultaneity of managers' responses to them. Moreover, a path, in contrast to a trajectory, highlights managers' targeted, creative, and reflexive actions to pave a way for their collaborations.

We found that the managers' Both-And responses (i.e., paradoxical thinking and balancing) created high levels of performance, commitment, motivation, and cooperation in the present. By stating tensions clearly, the managers were able to balance them, which led to setting clear goals and boundaries but also flexibility and trust; this, in turn, allowed the director and researcher (and others) to perform and maintain strong motivation in a volatile setting. We also found that the managers' More-Than responses (i.e., fulfilling promises and transcending) supported the endurance of the relationship across time. Despite high ambiguity and unpredictability, the managers skillfully enacted connections among the relationship's past, present, and future and engaged in creative problem solving to adapt the relationship to the changing context.

Figure 1 illustrates, through a recursive model, our theory of how managers' ongoing responses to paradoxical control-trust dynamics affect the performance and endurance of their collaborations. The model's starting point is managers' difficult task of balancing control-trust dynamics. The model then illustrates the recursive processes whereby

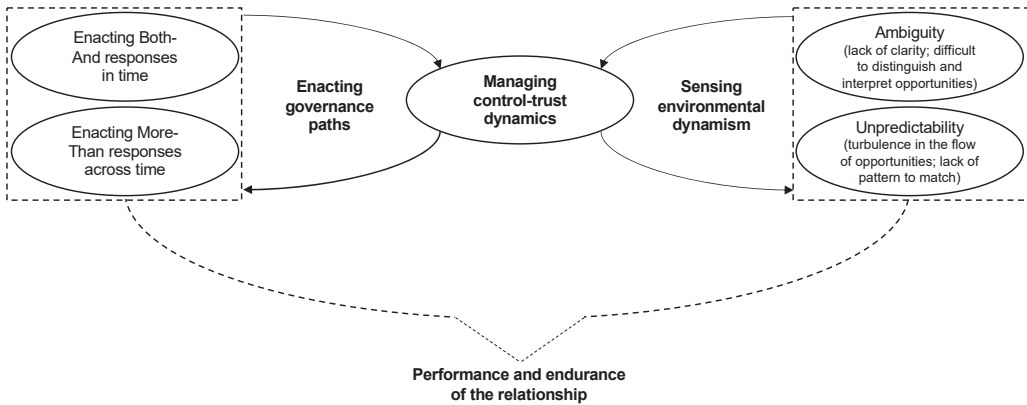


Figure 1. Recursive model of how managers' responses to control-trust dynamics affect the performance and endurance of interorganizational relationships

managers sense shifts in the environmental dynamism and enact governance paths, which involves responding to paradoxical control-trust dynamics in and across time. Sensing environmental dynamism involves perceiving shifts in the environment's ambiguity and unpredictability. Enacting governance paths entails simultaneously enacting Both-And responses in time and More-Than responses across time. As a result, managers positively impact both the performance of their interorganizational relationship in time and its endurance across time.

DISCUSSION

In this article, we adopted a constitutive approach to explore how managers respond to paradoxical control-trust dynamics in interorganizational relationships over time. We now discuss our study's contributions and implications, boundary conditions, and future research directions.

Theoretical Contribution

Overall contribution: Managers' creative responses to paradoxical control-trust dynamics. Our findings advance the control-trust literature by unveiling (a) a new category of response to control-trust dynamics beyond substitution and complementarity (the More-Than), (b) three new enacted responses beyond balancing (paradoxical thinking, fulfilling promises, and transcending), and (c) a governance path that managers' creative, reflexive, and targeted responses evolve over time that ensures the performance and endurance of their interorganizational relationships.

Challenging core assumptions about control-trust dynamics. By focusing on managers' creative role, we reveal a new category of response to control-trust dynamics: More-Than responses. More-Than responses are characterized by situating oppositional pairs in a new relationship (Putnam et al., 2016, p. 128). We found that managers enacted More-Than

responses through fulfilling promises and transcending. We define fulfilling promises as enacting governance mechanisms to fulfil past promises and to articulate promises for the future. We observed, for example, that managers established contracts as the fulfilment of promises made in the past and enacted a paradox of trusting (anticipating) the need for future control. We define transcending as positioning opposites in a novel relationship to each other by moving outside of a paradoxical system to a new level of meaning or by expanding the boundaries of an organization's context. We observed that managers expanded the boundaries of their collaboration to widen the context of their interactions and connect control and trust in new ways.

Introducing More-Than responses has two important implications. First, More-Than responses indicate the existence of control-trust dynamics other than substitution and complementarity. Substitution and complementarity appear to be the only dynamics when we perceive control and trust as opposites (substitution treating them as distinct poles and complementarity as inseparable). Other dynamics begin to appear when we consider control and trust outside this opposition. Second, managers' simultaneous enactment of Both-And and More-Than responses suggests the need to consider not only sequential (Huber et al., 2013) but also coexisting control-trust dynamics. Some scholars explore coexisting dynamics (Howard et al., 2019), but these dynamics can be even more comprehensively understood if we adopt a constitutive approach because it allows us to identify managers' extensive repertoire of responses to these paradoxical dynamics. Exploring coinciding responses can provide more-nuanced accounts of control-trust dynamics within and across transactions (Brattström et al., 2019; Faems et al., 2008; Inkpen and Currall, 2004; Zheng et al., 2008).

Rethinking what balancing means. Focusing on managers' creative responses to paradoxical control-trust dynamics challenges us to reconsider what *balancing* control and trust actually means. First, our findings suggest that although balancing is important, it coexists with three other managerial responses: paradoxical thinking, fulfilling promises, and transcending (see definitions and examples in the Findings). Like balancing, paradoxical thinking draws on a complementarity logic, but rather than seeking an equilibrium point between opposites, paradoxical thinking involves making latent tensions clear and explicit and gradually developing a sophisticated skill of managing paradoxical control-trust dynamics. We observed that when negotiating new contractual arrangements, the managers constantly articulated the contradiction between controlling commercial exploitation and trusting scientific exploration.

Second, when we adopt a constitutive approach to paradoxical dynamics, balancing gains new meaning because paradoxical situations are not possible to resolve permanently and therefore persist over time. Consequently, rather than seeking harmony, balancing control and trust means engaging in a long-term struggle associated with stress, anxiety, and discomfort.

New perspectives on opposing mechanisms of control-trust and on failures. Finally, investigating managers' responses to paradoxical control-trust dynamics helps us rethink two core

issues in the control-trust literature. First, previous research has consistently referred to the opposing mechanisms of control and trust as drawing on complex and often conflicting factors (Long and Sitkin, 2018; Lumineau, 2017). Yet, scholars have not yet articulated these opposing mechanisms as paradoxical. Exploring control and trust as paradoxical might help us better understand both what can be at stake in managers' continuous grappling with control and trust and what managers sometimes do: they respond to paradoxes.

Second, scholars have also called for better understanding of why so many interorganizational collaborations fail (e.g., Faems et al., 2008; Krishnan et al., 2016) and how control-trust dynamics influence performance (Cao and Lumineau, 2015; Long and Sitkin, 2018). Previous research has, for instance, suggested that success depends on managers' ability to deal with behavioural and environmental uncertainty (Krishnan et al., 2016). We suggest that success may also depend on managers' ability to enact relevant responses to paradoxical dynamics and to gradually learn how to manage paradoxical situations effectively. Our findings suggest that Both-And and More-Than responses together allowed the managers to ensure the performance and endurance of the relationship with the researcher.

Conceptual model: How managers' responses to paradoxical control-trust dynamics create performance and endurance. Figure 2 explains the relationship between managers' responses to paradoxical control-trust dynamics and the performance and endurance of interorganizational relationships. Figure 2 connects the mode of managers' responses (i.e., discontinuity or

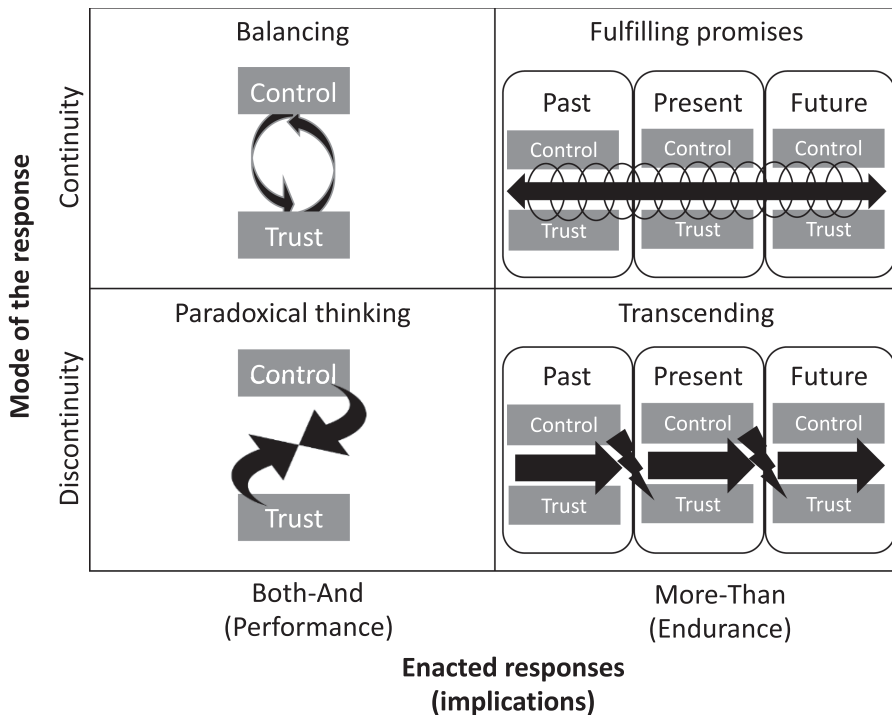


Figure 2. Conceptual model of managers' responses to paradoxical control-trust dynamics

continuity) with the implications of these responses (i.e., endurance or performance). The model predicts that managers' ongoing enactment of these four responses ensures the performance or endurance of their collaborations.

Multiple coinciding recursive processes. All four responses entail recursive processes: managers respond to environmental shifts through balancing, paradoxical thinking, fulfilling promises, and transcending, and these responses occur in an ongoing, recursive process. However, rather than unfolding according to a specific relational dynamic, which a process model could capture, these enactments occur simultaneously. Therefore, our model shows the separate dynamics of the responses, which, in practice, overlap and interlink.

Integrating internal/continuity and external/discontinuity perspectives. Our model connects two perspectives that are currently separate in the control-trust literature: an internal/continuity perspective and an external/discontinuity perspective. Adopting an external perspective, one group of scholars has focused on how control-trust dynamics evolve from environmental 'triggers' (e.g., Howard et al., 2019; Huber et al., 2013; Keller et al., 2021), suggesting that environmental events create discontinuity (even disruption) in control-trust dynamics. Through an internal perspective, another group of scholars has explored how control and trust coevolve over time in virtuous or vicious cycles (Faems et al., 2008; Vlaar et al., 2007), a process influenced by managers' gradual learning (e.g., Ariño et al., 2014; Inkpen and Currall, 2004). These studies have suggested that continuity results from the coevolution of control and trust, although managers' learning affects how this process unfolds (Ariño et al., 2014).

Our conceptual model integrates these two perspectives by suggesting that managers' responses to paradoxical control-trust dynamics entail different modes of responses that set the conditions for continuity and discontinuity in the collaboration. Managers' responses of balancing and fulfilling promises constitute continuity. Whereas balancing seeks to accommodate both control and trust and seeks continuity rather than breakdown, fulfilling promises aims to connect the past and future in the present, thereby creating flow rather than disruption. In contrast, managers' responses of paradoxical thinking and transcending constitute discontinuity, which is crucial for transformative change from one phase to the next. While paradoxical thinking facilitates shifts in mindsets by making the paradox evident, transcending rises above existing perceptions and situates control and trust in a new relationship, which actors need to leap into the next phase. Consequently, responses that operate through discontinuity explain the transition between one phase and the next, and responses operating through continuity explain stability of the relationship.

Integrating performance in time and endurance over time. Our model integrates these perspectives with performance and endurance (also discussed in relation to our notion of governance paths, defined as a complex organizational governance system that managers evolve by enacting responses to paradoxical control-trust dynamics simultaneously in and across time). Although our conceptual model requires further empirical scrutiny, it suggests that the Both-And responses of balancing and

paradoxical thinking affect the performance and motivation of collaborating partners in time. While scholars have extensively studied the importance of balancing for individuals' performance (Bachmann, 2001; Bijlsma-Frankema and Costa, 2005), the role of paradoxical thinking in enabling clarity and, hence, higher performance has been less explored. We know that 'managers who question and reflect upon shifting paradoxes are more effective in dealing with contradictory situations' (Putnam et al., 2016, p. 124); therefore, we suggest that paradoxical thinking might be important for managers' ability to deal with paradoxical control-trust dynamics so that these paradoxes do not obscure the setting of a clear direction. Likewise, we suggest that the More-Than responses of fulfilling promises and transcending are important for ensuring that a relationship endures over time. Fulfilling promises affects the endurance of a relationship by evoking the past and articulating claims for the future. Transcending is crucial for endurance because it involves the ability to adapt the governance of the relationship to contextual changes.

Boundary conditions. We studied how managers respond to paradoxical control-trust dynamics in the context of the pharmaceutical industry and an emerging scientific field. This context involves a highly dynamic environment with high levels of uncertainty, ambiguity, and unpredictability and, therefore, potentially extreme paradoxical control-trust dynamics that pressure managers to invent creative responses. Consequently, in contexts with less uncertainty and turbulence, balancing and fulfilling promises might be sufficient responses, while paradoxical thinking and transcending are particularly prominent when the context involves significant change and innovation.

Moreover, we studied how company managers at Lundbeck responded to paradoxical control-trust dynamics that emerged in relationships with academic partners, and although our data provided insight into these academic partners' actions (through the Lundbeck managers' accounts), we did not investigate the responses to paradoxical dynamics on both sides of the dyad. Doing this would have allowed us to compare different partners' responses and clarify how different contexts (academic and industrial) shape actors' responses. We would thereby be better able to understand the potential asymmetries between the managers and the researcher (Lumineau and Oliveira, 2018).

Future research directions. We suggest that future research further develop a constitutive approach to explore managers' enacted responses to paradoxical control-trust dynamics and further investigate managers' roles in developing governance paths. A constitutive approach is important because it directly connects managers' actions and their environments. We suggest that future research shift attention from control-trust dynamics to managers' enactments of control and trust, because this could reveal a broader range of responses to control-trust dynamics and advance the literature into new territories. Such research could focus on paradoxes but also explore managers' enactments of other aspects of control and trust, such as how symmetries and asymmetries affect

interorganizational relationships.

How managers respond to paradoxical dynamics is a worthy topic since we still know too little about how managers perceive and act on the opposing mechanisms of control and trust. In our research setting, we found that Both-And and More-Than responses were prevalent, and we did not find enactments of Either-Or responses (substitutional dynamics). This result might indicate that, particularly in high-performing interorganizational relationships, substitutional dynamics (Either-Or) occur less often than complementary dynamics (Cao and Lumineau, 2015). It might also reflect the point made earlier, that in an R&D context, managers are forced to adopt Both-And or More-Than responses to succeed. Accordingly, we suggest that future research could explore which conditions shape managers' choices of specific categories of responses.

Governance path is a potentially valuable concept for studying the interplay between managers' creative, reflexive, and targeted responses to paradoxical control-trust dynamics in and across time and the performance and endurance of their relations. Our study proposes a relationship between Both-And responses in time and performance and between More-Than responses across time and endurance. We suggest that future research explore more carefully how these paths relate to both the success of interorganizational relationships and the skills of managers.

Finally, a constitutive approach, particularly our concept of governance paths, may also be relevant for exploring how managers respond to tensions beyond control and trust. Future research could explore governance paths that simultaneously address cooperation–competition, rigidity–flexibility, and long-term–short-term orientations, which are core tensions believed to impact endurance in interorganizational relationships (e.g., Das and Teng, 2000).

Managerial Implications

Our study suggests that enacting relevant responses to paradoxical control-trust dynamics is a skill that requires managers to learn different responses that involve shifting between mindsets, knowing when to enact which response, and knowing how to enact multiple responses simultaneously. We suggest that this skill requires enacting multiple governance mechanisms in concert, both in and across time. Mastering this requires deep familiarity with different governance mechanisms and how they, when enacted together, enable innovative governance that gives managers the structure and flexibility to advance their interorganizational relationships. Our term *governance path* signifies the evolution of such a governance space over time. We therefore suggest that enacting governance paths is a fundamental managerial skill that can make the difference between the success and failure of interorganizational relationships. For this reason, both managers and management scholars should carefully consider these paths in the future.

ACKNOWLEDGMENTS

We are grateful for valuable feedback from the special issue guest editors Nicholas Argyres, Chris Long, Fabrice Lumineau, and Sim Sitkin, Associate Editor for JMS Gideon Markman, and three anonymous reviewers for JMS. We also thank the participants of the JMS SI Paper Workshop for valuable feedback.

Moreover, we are grateful to our colleagues at the Department of Organization at Copenhagen Business School for their valuable feedback during an OT Publishing Workshop. Finally, we thank our informants at Lundbeck for providing generous access to data and for sharing their ongoing reflections on the challenges of managing control-trust dynamics in interorganizational collaborations.

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